

# CELERY AND CARROT INSECT PESTS

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**Aster leafhopper** (Fig. 1) (also known as the six-spotted leafhopper) is the major carrier of aster yellows disease. Aster yellows is a common disease of many vegetable crops, including carrots and celery (Fig 2). The disease, caused by a mycoplasma-like organism, can be controlled only by controlling the leafhopper and weed hosts for the leafhopper and the disease organism.

The adult leafhopper is light gray-green and 1/8 inch long, and it is an active flier. Immature aster leafhoppers are rarely present in vegetable crops. The aster leafhopper overwinters in Michigan as eggs on grasses and small grains. It also overwinters in southern Missouri and northern Arkansas, and adults may migrate into Michigan on storm fronts.

Many weeds are hosts for the aster leafhopper and sources for aster yellows disease, including Queen Anne's lace (wild carrot), pineappleweed, and horseweed or mare's tail. To transmit the disease, a leafhopper must pick up the aster yellows organism from an infected plant. The disease organism then must incubate inside the leafhopper for approximately 3 weeks before it can be transmitted to another plant. Because of this long incubation time, the disease is rarely spread from plant to plant within a commercial field. The most common method of infection is undoubtedly by leafhoppers that have fed on infected weeds and migrate into the crop after the 3-week incubation period.

**Green peach aphids** (Fig. 3) are also serious pests of carrots and celery. Populations may build up to very high numbers, damaging the plant (Fig. 4) as well as contaminating the product, in the case of celery. The green peach aphid overwinters as an egg on peach, plum and possibly wild cherry and other stone fruit. Eggs hatch in the early spring and all develop into females. Each female may give birth to 80 to 100 live young, also all females. No mating occurs, so each of the young is a genetic copy of the mother. Two or three generations occur in this manner on the overwintering host. As the aphids get crowded or the food quality of the host declines, winged

adults are produced and begin migrating to more than 250 kinds of host plants, including lettuce, celery, carrots, potatoes, tomatoes, and many other crops and weeds. The females alight and begin feeding and producing more female offspring. There may be 12 to 15 or more generations per year. A generation including winged males is produced in the fall, in response to shorter day length. The winged males and females migrate back to the overwintering hosts and mate, and the females lay the overwintering eggs.

Aphids have many natural enemies, including predators (lady beetles, lacewing larvae, etc.), parasitoids (tiny wasps) and diseases of these insects. These help tremendously in controlling aphids under most conditions, in spite of the aphids' very high reproductive rates.

**Loopers** can be a serious problem in celery. Celery loopers and cabbage loopers look much alike in the larval stages. The celery looper adults are active early, beginning in late April to early May. Cabbage looper adults migrate into Michigan in late June or July. Eggs are deposited on the plants mainly in late evening or at night. The eggs hatch and the larvae (Fig. 5) (light green with a white stripe along each side and down the center of the back) begin to feed on the leaves and other plant tissues. This feeding reduces quality, and the larvae can be a source of contamination at harvest. The larvae grow rapidly and become increasingly difficult to control with age. The larvae get the name "looper" from their inchworm-like motion. The celery looper may have 3 or 4 generations per year in Michigan, and the cabbage looper, 2 or 3 generations.

**Variegated cutworms** apparently pass their first generation in May and early June on clovers, alfalfa and weeds. Second generation adults are active beginning in late June or early July, when they lay eggs on celery and a number of other vegetable crops. The eggs are laid on the underside of the foliage, where the small larvae feed for a few days before moving down into the heart of the plant. Damage consists of feeding injury to the leaf petiole, usually near the heart of the plant (Fig. 6). This reduces quality and often makes the stalk unmarketable. Equally im-

portant, the larvae are a contaminant in fresh market celery.

**Carrot weevil** (Fig. 7) (a beetle 5/16 inch long, with medium snout, black speckles on brownish, dome-shaped back, faintly visible white band around mid-region of hind leg) has become a very serious pest of celery and carrots in Michigan. It overwinters as an adult in fields, ditch banks and hedgerows in the top 1 to 2 inches of soil, and in nearby greenhouses. Adults can fly but rarely do so. The adults begin spring emergence in April or May, depending on temperature. This closely coincides with the beginning of celery transplanting. The adult beetles attack the young celery plants, causing slight feeding damage to the leaves and petioles, and lay eggs in the petioles (Fig. 8). Larvae (Fig. 9L) hatch in about a week and move down to the root to pupate in the surrounding soil (Fig. 9R). The adults are very long-lived, so all stages—eggs, larvae, pupae and adults—are often present by midsummer. Egg laying ends by mid-August. Celery transplants can get infested with eggs and larvae while in the greenhouse and transplant beds. If such infested plants are subsequently moved into the field, the infestation quickly becomes widespread and devastating. The damage consists of stunted and/or killed celery plants in the field (Fig. 10). The larvae may also be a contaminant and/or make excessive trimming necessary to market the crop. Tunneling in carrots occurs primarily in the upper one-third of the root (Fig. 11).

**Tarnished plant bugs** can also cause severe damage to celery. Toxic saliva, injected during feeding, causes localized tissue necrosis in new growth and petioles.

*For chemical control recommendations, homeowners should consult Extension Bulletin E-760(b), "Home Vegetable Garden Disease, Insect and Weed Control," available from your county Cooperative Extension Office. Commercial growers should consult Extension Bulletin E-312, "Control of Insects, Diseases and Nematodes on Commercial Vegetables."*



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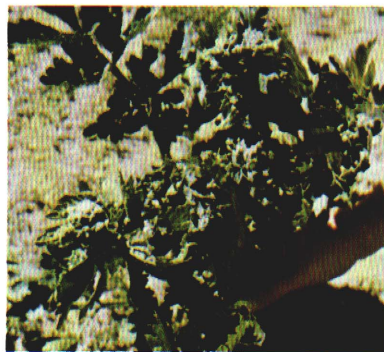
1. Aster leafhopper adult (left: front view; right: top view)



2. Aster yellows disease in celery (left) and carrots (right). Note heavy rooting in diseased carrot on right



3. Green peach aphids on celery (arrow)



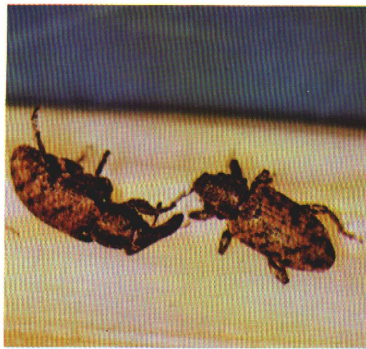
4. Aphid damage to celery (note malformed leaves)



5. Cabbage looper larva



6. Variegated cutworm (note yellowish spots on back) and damage



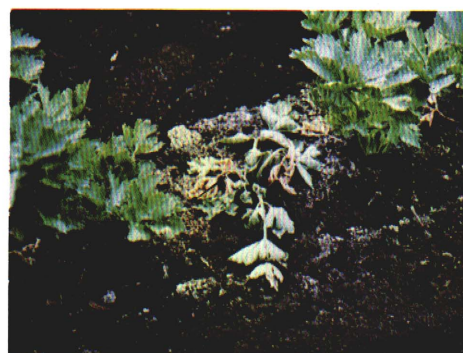
7. Carrot weevil adults



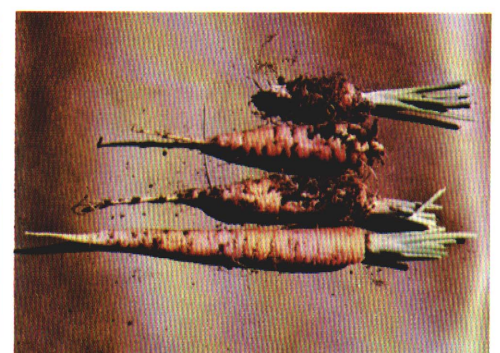
8. Carrot weevil eggs (left) and egg-laying scars on carrot petiole (right)



9. Carrot weevil larvae (left); pupa (right)



10. Carrot weevil damage to celery



11. Carrot weevil damage to carrots (top 3 damaged)